UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/750,796	12/31/2003	Charles John Freeman	7323	1797

7590 05/10/2007

Robert D. Touslee
Johns Manville International, Inc.
10100 West Ute Avenue
Littleton, CO 80127

EXAMINER	
LAZORCIK, JASON L	

ART UNIT	PAPER NUMBER
1731	

MAIL DATE	DELIVERY MODE
05/10/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No.	Applicant(s)	
	10/750,796	FREEMAN, CHARLES JOHN	
	Examiner	Art Unit	
	Jason L. Lazorcik	1731	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *08 March 2007*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-3 and 5-16* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3 and 5-16* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date *03/08/2007*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham* **v.** *John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

Claims 1-3, 5, 8-12, and new claims 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bell (US 3,278,844) in view of Northrup (1,144,776). Briefly, Bell teaches of a device for use in measuring the electrical resistivity of molten glass in-situ while Northrup is directed to a resistometer with particular relevance to that claimed in the instant application.

As set forth in the previous Office Action dated December 5, 2006, Bell teaches that" the resistivity of molten glass is a function of both composition and temperature. If the temperature of molten glass in a forehearth is maintained constant, changes in resistivity are indicative of composition changes and can be utilized to detect and control such changes...for certain glass compositions...variations in resistivity are

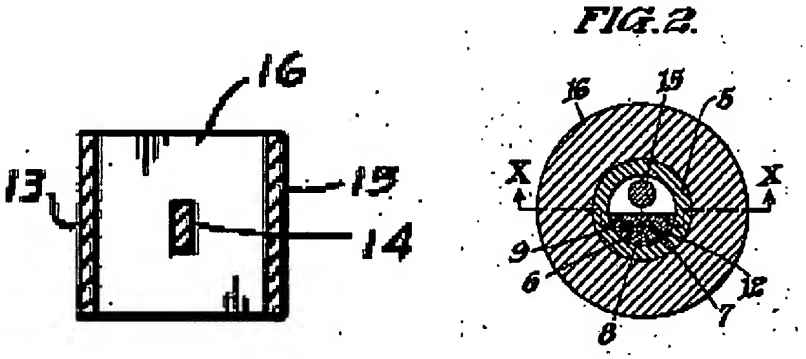
indicative of changes in viscosity and may therefore be utilized in controlling variation in gob size." (Column 1, Lines 14-32).

The bell process is therefore understood to disclose a method for controlling at least one parameter or "a plurality of parameters" in a molten glass operation by monitoring the electrical resistance of the molten glass with "at least one pair of electrodes". Bell specifically sites control over composition and "in addition" the temperature of for example a borosilicate melt.

Although not explicitly stated, the process which measures resistivity of molten glass in a forehearth is implicitly understood to encompass the procedure of melting a raw material in the furnace to form the molten glass. As clearly recited in the excerpt above, Bell applies the measured resistivity to control the composition (e.g. by altering he composition of the raw material used to form the molten glass) or the temperature (e.g. the amount of heat provided to the molten glass) and therefore the viscosity of the molten bath. Both control operations are understood to control "a characteristic of the molten glass".

Now regarding Applicants amendments and newly submitted claims, Bell teaches (See figures 1 and 2, and a sensor comprising an inner (14) and outer (13, 15 and 16) electrode arrangement with a non-conductive spacer element (17). Bell is however silent regarding the specific details of the sensor comprising an inner tube connected to a first electrode and an outer tube connected to a second electrode. Bell is further silent regarding the particular limitation wherein the sensor extends down into the melt from a position above the molten glass. With respect to the latter limitation, it is the Examiners

position absent any compelling and unexpected results to the contrary that it would have been obvious to mount the Bell sensor apparatus in any convenient orientation as deemed optimal for the end user application. For example, it would have been obvious to one or ordinary skill to mount the sensor from a position in the tank above the melt for downward extension into the melt [**Claim 16**] in order to facilitate periodic cleansing of the melt tank walls and floor. Although not here relied upon, similar geometries are known and have been documented in the art (see Berg US 4,603,980).



With respect to the particular details of the sensor design, Northrup teaches an apparatus for measuring temperature and resistivity "particularly of a molten material" by passing current there through. In similar fashion to the Bell apparatus, the temperature of the molten material is determined by measuring its resistance (Page 1, lines 19-27). With particular attention to the resistometer configuration presented in the instant reference figure 3 and cross-sectional diagram from the instant figure 2 (see excerpt figure above right), Northrup teaches a sensor disclosing essentially every element as presently claimed. Specifically, the reference teaches a sensor comprising an inner tube (6) connected to a first electrode (9) and an outer tube (5) connected to a second electrode (15). The inner (6) and outer (5) tubes are spaced apart by a

refractory or ceramic cement (8) (Pg 3, lines 4-13) [**Claim 13, 14**]. If further appears in the open bottom resistometer design (reference figures 3 and 1) that the inner tube (6) is longer than the outer tube (5) as set forth in new **Claim 15**. Speaking on the merits of the disclosed design, Northrup teaches that the disclosed sensor is practical, inexpensive (Pg 3, lines 88-124). Since the disclosed resistometer performs as essentially as a functional equivalent to the sensor disclosed in the Bell apparatus, the Northrup sensor would have been an obvious substitution for one of ordinary skill in the art seeking a practical and inexpensive temperature measurement apparatus for a glass melt operation.

Regarding **Claim 8**, Bell fails to explicitly indicate the response to a resistivity measurement results in "increasing or decreasing a temperature setpoint" in the processing of the molten glass. Bell does explicitly point to control over temperature as a principle control variable modified in response to the resistance measurement. Since "set point tracking" algorithms and corresponding devices (e.g. PID controllers) are widespread and commonly utilized in most modern manufacturing procedure, it would have been readily evident to one of ordinary skill in the art at the time of the invention to increase or decrease a "temperature setpoint" in the system in order to control the system temperature.

With respect to **Claim 11**, Bell is silent regarding the disclosed step of adjusting a process parameter in order to "maintain the electrical resistance of the molten glass in a predetermined range or at a predetermined level". Since electrical resistance of the melt is a response variable indicating various properties of the melt

(composition/temperature), it would have been obvious to one of ordinary skill in the art at the time of the invention seeking to standardize and/or optimize the product to maintain the melt resistance within a predetermined range. Alternately stated, low variance in the melt resistance would be indicative of a standard composition and/or a standard temperature, both of which may be desirable properties for one seeking to optimize the glass material produced by the system.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bell as applied to claim 1 above, and further in view of Varrasso (US 4,780,120). Bell is silent regarding the conveyance of the molten glass to a glass fiber forming apparatus. Varrasso teaches a glass fiber forming bushing which is filled with molten glass. The instant reference clearly indicates that " the diameter of the fibers produced is dependent upon the composition of the glass, the temperature of the glass", and other process variables. Since temperature and composition are critical parameters in the quality of fiber produced from a molten glass stock and since Bell teaches electrical resistivity as a proven approach to monitoring both of said variables, incorporating the teachings of Bell in the Varrasso process would have been an obvious modification/addition to the disclosed fiber making apparatus.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jason L. Lazorcik whose telephone number is (571) 272-2217. The examiner can normally be reached on Monday through Friday 8:30 am to 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steven Griffin can be reached on (571) 272-1189. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

JLL

STEVEN P. GRIFFIN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 1700